Ogham monuments, and to whom belongs the credit of having kept the attention of Irish antiquaries fixed on their importance, should not have published before now the collection of inscriptions of which he has long been in possession; accompanying each sketch with an exact description of the nature of the monument, its locality, and the circumstances attending its discovery. Such an assemblage of facts would have been of the utmost value, as presenting the decipherer with the materials necessary for him to work on. Mr. Graves stated, at the same time, that he did not concur in the readings and translations of Ogham inscriptions given in Mr. Windele's valuable work entitled "*Notices of Cork.*" Reference was made to one inscription in particular, given in page 128 of that work, in the deciphering of which Sir William Betham and the Rev. Matthew Horgan have committed the error of reading the line of characters from the top of the stone downwards, instead of in the opposite direction. The stone actually bears a name which is found on another monument in the county of Cork.

In conclusion, Mr. Graves stated that he would postpone to another occasion the reading of that part of his paper which refers to the origin of the Ogham character, and the relation which it bears to secret alphabets used in other countries.

JUNE 12, 1848.

REV. HUMPHREY LLOYD, D. D., PRESIDENT, in the Chair.

THE President read a paper "On certain questions connected with the Reduction of Magnetical and Meteorological Observations."

It is well known that the mean value of any magnetical

or meteorological element, for any day, may be had approximately, by taking the *arithmetical mean* of any number of observed values obtained at *equal intervals* throughout the twenty-four hours; the degree of approximation, of course, increasing with the number. It is important to ascertain the law which governs this approximation.

Any periodical function, u, of the variable v, being represented by the formula

$$u = a_0 + a_1 \sin(v + a_1) + a_2 \sin(2v + a_2) + \&c.,$$

in which a_0 is the true mean, or

$$a_0 = \frac{1}{2\pi}\int_{-\pi}^{\pi} u dv,$$

if u_1, u_2, u_3, &c., u_n, denote the values of the function u, corresponding to those of the variable

$$v, \quad v + \frac{2\pi}{n}, \quad v + \frac{4\pi}{n}, \quad \&c. \quad v + \frac{2(n-1)\pi}{n},$$

it may be shown that their arithmetical mean is equal to

$$a_0 + a_n \sin(nv + a_n) + a_{2n} \sin(2nv + a_{2n}) + \&c.,$$

whatever be the value of v. Hence, as the original series is always convergent, we have, when the number n is sufficiently great,

$$a_0 = \frac{1}{n}(u_1 + u_2 + u_3 + \&c. + u_n),$$

nearly; the error having for its limit

$$a_n + a_{2n} + \&c. = a_n, \text{ nearly.}$$

Hence, when the period in question is *a day*, we learn that the *daily mean value* of the observed element will be given by the mean of *two* equidistant observations, nearly, when a_2 and the higher coefficients are negligible; by the mean of *three*, when a_3 and the higher coefficients are negligible; and so on.

The coefficient a_2 is small in the case of the temperature; the curve which represents the course of the diurnal changes

of temperature being, nearly, the curve of sines. In this case, then, the mean of the temperatures at any two *homonymous* hours is, nearly, the mean temperature of the day. This fact has been long known to meteorologists.

The coefficient a_3 is small in *all* the periodical functions with which we are concerned in Magnetism and Meteorology; and therefore the daily mean values of these functions will be given, very nearly, by the mean of any *three* equidistant observed values. To show this, the author gives the four following groups of results, obtained by combining *three eight-hourly* values of the magnetic declination, the atmospheric pressure, and temperature. The results combined, u_1, u_3, u_5, &c., are the yearly mean values corresponding to the hours 1, 3, 5, &c., *reckoned from midnight*, as deduced from the observations made in the Magnetical Observatory of Dublin in 1843. The mean of all the values, corresponding to the twelve hours of observation, is denoted by a.

Means.	Declin.	Pressure.	Temperature.
$\frac{1}{3}(u_1+u_9+u_{17})-a$	$+0'{\cdot}5$	$+{\cdot}0005$	$+0^{\circ}{\cdot}1$
$\frac{1}{3}(u_3+u_{11}+u_{19})-a$	$-0{\cdot}3$	$+{\cdot}0005$	$0{\cdot}0$
$\frac{1}{3}(u_5+u_{13}+u_{21})-a$	$-0{\cdot}1$	$-{\cdot}0005$	$-0{\cdot}3$
$\frac{1}{3}(u_7+u_{15}+u_{23})-a$	$0{\cdot}0$	$-{\cdot}0005$	$+0{\cdot}2$

It appears, then, that three equidistant observations are sufficient to give the daily mean values (and therefore also the monthly and yearly mean values) for each of these elements. In choosing the particular hours for a continuous system of observations, we should select those which correspond nearly to the maxima and minima of the observed elements, so as to obtain also the *daily range*. This condition is fulfilled, in the case of the magnetic declination, very nearly, by the hours 6 A. M., 2 P. M., 10 P. M.; and if we add the intermediate hours 10 A. M., 6 P. M., we shall have, nearly, the principal maxima and minima of the other two magnetical elements, the maximum of temperature, and the two maxima

of pressure. The author accordingly proposes, as the best hours of observation in a limited system,

6 A. M., 10, 2 P. M., 6, 10.

The case is different where the course of the diurnal curve has been already obtained from a more extended system of observations. In this case the mean of the day may be inferred from observations taken at *any hours* whatever; and the hours of observation should therefore be chosen, chiefly, if not exclusively, with reference to the diurnal range of the observed elements.

The author proceeds, in the next place, to consider the course to be pursued in the reduction of a more extended system of observations (such as that prescribed by the Royal Society in 1839, and adopted by all the Magnetical Observatories), when some of the observations are deficient. He shows that, in this case, in deducing the daily means from the remaining observations, we must attend, not only to the elimination of the regular diurnal variation, but also to that of the irregular changes of longer periods, which are sometimes (as in the case of the atmospheric pressure) more influential in the result. With this view he determines the values of the *mean daily fluctuation* for each of the elements already referred to; and compares the mean values of the horary changes thence arising with that resulting from the regular diurnal variation.

The author shows, finally, in what manner the *monthly means* of the results obtained at any hour are to be corrected in the case of deficient observations, so as to render them comparable with those in which none are wanting; and he deduces the probable values of these corrections for each element, with the view of ascertaining in what cases the correction may be disregarded, and in what it is indispensable.

Professor Graves exhibited and described a silver brooch, belonging to the Royal Dublin Society, and bearing on it an inscription in the Ogham character.